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EXAMINER

SORKIN, DAVID L

ART UNIT	PAPER NUMBER
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1723

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DATE MAILED: 04/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/753,944

Applicant(s)

PHILLIPS, BARRY L.

Examiner

David L. Sorkin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 32-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-42 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 & 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-31, drawn to a mixing apparatus, classified in class 366, subclass 174.1.
  - II. Claims 32-42, drawn to a method of mixing, classified in class 366, subclass 348.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus could be used to mix liquid rather than gas. Also, the apparatus could be used in a method where a combustion gas is not provided. For example, the apparatus could be used to treat water with chlorine or ozone.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

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5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

6. During a telephone conversation with Robert Brown on 09 April 2002 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-31. Affirmation of this election must be made by applicant in replying to this Office action. Claims 32-42 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Specification***

7. The abstract of the disclosure is objected to because it fails to comply with 37 CFR 1.72(b) which requires that abstracts not exceed 150 words.

### ***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 4, 10-25, 30 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. In claim 4, it is unclear if "the wing" refers to the "at least one wing" recited in claim 4, the "at least one wing" recited in claim 3, or the "at least one wing" recited in claim 1. The word "the" or "said" should precede subsequent references to a claimed element. Each recitation of "at least one wing" will not be assumed to be related to any previously recited wing or wings unless a relationship is explicitly recited.

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11. Dependent claims 4 and 10-25 are considered indefinite because they recite limitations without setting forth any relationship between the limitations and the apparatus of the base claim. For example, in claim 11, the stipulation "wherein at least one wing is a cambered wing" does not state whether or not such a wing is or is not part of the claimed apparatus and appears open to any wing anywhere being chambered, regardless of whether it is associated with the structural elements of the parent claim.

12. Claim 13 is further rendered indefinite by the phrase "relates to" which is vague.

13. In claim 17, it is unclear whether "the at least one wing" refers to the "at least one wing" recited in claim 16 or the "at least one wing" recited in claim 9 or the "at least one wing" recited in claim 8.

14. The further limitations of claims 18 and 19 appear to contradict parent claim 17, because claim 17 requires the chord line to be parallel to the flow, while the further limitations of claims 18 and 19 require a non-parallel angle.

15. In claim 20, it is unclear whether "the wing" refers to the "at least one wing" recited in claim 20, the "at least one wing" recited in claim 16 or the "at least one wing" recited in claim 9 or the "at least one wing" recited in claim 8.

16. The further limitations of claims 30 and 31 appear to contradict parent claim 26, because claim 26 requires the chord line to be parallel to the flow, while the further limitations of claims 30 and 31 require a non-parallel angle.

#### **Note**

17. The instant claims include numerous stipulations concerning what the claimed apparatus is intended to do such as generate vortices, generate lift and shed a vortex.

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Applicant is reminded that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device *is*, not what a device *does*". *Hewlett-Packard v. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original).

18. The instant claims make several references to material intended to be acted upon by the claimed apparatus such as "combustion gas". Applicant is reminded that "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." *Ex parte Thibault*, 164 USPQ 66,667 (Bd. App. 1969). "Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims". *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

### ***Claim Rejections - 35 USC § 102***

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United

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States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

20. Claims 1-31 are rejected under 35 U.S.C. 102(b) as being anticipated by "Selective Catalytic Reduction" (SRC) provided with the IDS of paper No. 4. Regarding claim 1, SRC discloses a system comprising a duct having an interior passageway, at least one wing in the duct, and at least one nozzle disposed within the interior passage (see Figs. on pages 2 and 3). Regarding claim 2, the nozzle is adjacent the wing (see Figs. on pages 2 and 3). Regarding claim 3, at least one wing disposed with the interior passageway is operable to generate lift (see Fig. on page 2; see Note above). Regarding claim 4, at least one wing is operable to shed a vortex at a point on the wing (see Fig. on page 2; see Note above). Regarding claim 5, at least one nozzle is positioned adjacent the point on at least one wing where the vortex is shed (see Fig. on page 2; see Note above). Regarding claim 6, at least one wing is suspended within the interior passage of the duct (see Figs. on pages 2 and 3). Regarding claim 7, at least one wing is attached to an inner surface of the duct and extends therefrom (see Fig. on page 3). Regarding claim 8, SRC discloses a system comprising a duct having an interior passageway, at least one wing disposed within the interior passageway and at least one nozzle disposed within the interior passageway (see Figs. on pages 2 and 3). Regarding claim 9, at least one wing disposed with the interior passageway is operable to generate lift (see Fig. on page 2; see Note above). Claims 10-25 fail to further limit the claimed structure in a meaningful way as discuss above with regard to section 112; however, for the record, a wing being a substantially symmetrical airfoil as recited in claim 10 is shown on page 2; a wing being a cambered wing as recited in claim 11 is



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shown on page 2; a wing being a substantially arcuate shape airfoil as recited in claim 12 is shown on page 2; an arcuate shape relating to a camber line of a camber wing as recited in claim 13 is shown on page 2; an wing being an airfoil provided with a camber line as recited in claim 16 is shown on page 2; a wing positioned within the interior passage of the duct such that a chord line define a straight line extending a distance relative to a cross section of the wing is substantially parallel to a line defining the direction of the flow of combustion gas within the interior passage as recited in claim 17 is shown on page 2; see page 2 and the rejections under section 112 regarding self contradictory claims 18 and 19; a wing operable to shed a vortex as recited in claim 20 is shown on page 2 (also see above Note), a nozzle positioned adjacent a position on a wing where a vortex is shed as recited in claim 21 is shown on page 2; a nozzle discharging a mixture in the flow as recited in claim 22 is shown on page 2 (also see above Note); a nozzle being positioned adjacent the point on a wing where a vortex is shed as recite in claim 23 is shown on page 2; a nozzle discharging the mixture as recited in claim 24 is shown on page 2 (see also above Note, direction of flow is an intended use); a nozzle positioned adjacent the point on a wing where the vortex is shed as recited in claim 25 is shown on page 2. Regarding claim 26, SCR discloses a system comprising a duct having an interior passageway; a wing having operable to generate lift positioned within the interior passageway such that a chord line defining a straight line extending a cross sectional distance of the wing is substantially parallel to a line defining the direction of the flow, the wing operable for generating at least one vortex at a point on the wing and at a nozzle within the passageway, the nozzle



operable to discharge a mixture into the vortex generated by the wing (see Figs. on page 2 and 3; see above Note). Regarding claim 27, a plurality of wings are disposed within the interior passageway (see Fig. on page 3). Regarding claim 28, the plurality of wings are attached to an inside surface of the duct (see Fig. on page 3). Regarding claim 29, the plurality of wings are attached to the inner surface of the duct about a plane extending substantially perpendicular to the inner surface (see Fig. on page 3, the surface being that perpendicular to the arrow labeled "NH<sub>3</sub> and Air"). Claims 30 and 31 are considered to be self-contradictory as discussed above with regard to section 112; however, see Fig. on page 2 for relevant information.

21. Claims 1-31 are rejected under 35 U.S.C. 102(a & e) as being anticipated by Dohmann (US 6,135,629). Regarding claim 1, Dohmann ('629) discloses a system comprising a duct (2) having an interior passageway, at least one wing (1) in the duct, and at least one nozzle (9) disposed within the interior passage. Regarding claim 2, the nozzle is adjacent the wing (see Fig. 5). Regarding claim 3, at least one wing disposed within the interior passageway is operable to generate lift (see Fig. 5; see Note above). Regarding claim 4, at least one wing is operable to shed a vortex at a point on the wing (see abstract; see Note above). Regarding claim 5, at least one nozzle is positioned adjacent the point on at least one wing where the vortex is shed (see Fig. 5; see Note above). Regarding claim 6, at least one wing is suspended within the interior passage of the duct (see Fig. 5). Regarding claim 7, at least one wing is attached to an inner surface of the duct and extends therefrom (see Fig. 5). Regarding claim 8, Dohmann ('629) discloses a system comprising a duct (2) having an interior passageway, at least

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one wing (1) disposed within the interior passageway and at least one nozzle (9) disposed within the interior passageway. Regarding claim 9, at least one wing disposed with the interior passageway is operable to generate lift (see Fig. 5; see Note above). Claims 10-25 fail to further limit the claimed structure in a meaningful way as discuss above with regard to section 112; however, for the record, a wing being a substantially symmetrical airfoil as recited in claim 10 is shown in Fig. 3; a wing being a cambered wing as recited in claim 11 is shown in Fig. 3; a wing being a substantially arcuate shape airfoil as recited in claim 12 is shown in Fig. 3; an arcuate shape relating to a camber line of a camber wing as recited in claim 13 is shown in Fig. 3; a wing made of rigid sheet metal as recite in claims 14 and 15 is disclosed in col. 4, line 54-61; a wing being an airfoil provided with a camber line as recited in claim 16 is shown in Fig. 3; a wing positioned within the interior passage of the duct such that a chord line define a straight line extending a distance relative to a cross section of the wing is substantially parallel to a line defining the direction of the flow of combustion gas within the interior passage as recited in claim 17 is shown in Fig. 5; see Fig. 5 and the rejections under section 112 regarding self contradictory claims 18 and 19; a wing operable to shed a vortex as recited in claim 20 is described in the abstract (also see above Note), a nozzle positioned adjacent a position on a wing where a vortex is shed as recited in claim 21 is shown in Fig. 5; a nozzle discharging a mixture in the flow as recited in claim 22 is shown in Fig. 5 (also see above Note); a nozzle being positioned adjacent the point on a wing where a vortex is shed as recite in claim 23 is shown in Fig. 5; a nozzle discharging the mixture as recited in claim 24 is shown in Fig. 5 (see also above Note,

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direction of flow is an intended use); a nozzle positioned adjacent the point on a wing where the vortex is shed as recited in claim 25 is shown in Fig. 5. Regarding claim 26, Dohmann ('629) discloses a system comprising a duct (2) having an interior passageway; a wing (1) having operable to generate lift positioned within the interior passageway such that a chord line defining a straight line extending a cross sectional distance of the wing is substantially parallel to a line defining the direction of the flow, the wing operable for generating at least one vortex at a point on the wing and at a nozzle within the passageway, the nozzle operable to discharge a mixture into the vortex generated by the wing (see Fig. 5 and see above Note). Regarding claim 27, a plurality of wings are disposed within the interior passageway (see Figs. 8a-8c). Regarding claim 28, the plurality of wings are attached to an inside surface of the duct (see Fig. 5). Regarding claim 29, the plurality of wings are attached to the inner surface of the duct about a plane extending substantially perpendicular to the inner surface (see Fig. 5 and Figs. 8a-8c). Claims 30 and 31 are considered to be self-contradictory as discussed above with regard to section 112; however, see Fig. 5 for relevant information.

### **35 USC § 103**

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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23. While claims 14 and 15 are rejected under section 102 as anticipated by SCR rather than under section 103, this is because the limitations "constructed of a substantially rigid material" (claim 14) and "the rigid material is sheet metal" (claim 15) do not modify any positively recited structural element. If the claims were amended so that these limitations modified a positively recited wing, claim 14 would be rejected under section 103 because it would have been obvious to one of ordinary skill in the art to have used substantially rigid material to withstand the flow of the flue gas. Claim 15 would also be rejected under section 103 because it would have been obvious to one of ordinary skill in the art to have used sheet metal to withstand the high temperatures disclose (570-750 F, page 3, col. 2, lines 1-2). See Dohmann (US 6,135,629), col. 4, lines 54-61 for a teaching of rigid sheet metal wings in ducts for mixing ammonia into flue gas.

### ***Conclusion***

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Sorkin whose telephone number is 703-308-1121. The examiner can normally be reached on 8:00 -5:30 Mon.-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 703-


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872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



David Sorkin

April 17, 2002



**CHARLES E. COOLEY**  
**PRIMARY EXAMINER**